Sequence Listing

<110> Jardieu, Paula M.
Presta, Leonard G.

<120> Anti-IgE Antibodies (as amended)

<130> P0718P2C1D1C1US

<141> 2001-08-08

<150> US 08/466,163
<151> 1995-06-06

<150> US 08/405,617
<151> 1995-03-15

<150> US 08/185,899
<151> 1994-01-26

<150> PCT/US92/06860
<151> 1992-08-14

<150> US 07/879,495
<151> 1992-05-07

<150> US 07/744,768
<151> 1991-08-14

<160> 68

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Pro	Phe	Asp	Leu	Phe	Ile	Arg	Lys	Ser	Pro	Thr	Ile	Thr	Cys	Leu	
				20					25						30
Val	Val	Asp	Leu	Ala	Pro	Ser	Lys	Gly	Thr	Val	Asn	Leu	Thr	Trp	
				35					40						45
Ser	Arg	Ala	Ser	Gly	Lys	Pro	Val	Asn	His	Ser	Thr	Arg	Lys	Glu	
				50					55						60
Glu	Lys	Gln	Arg	Asn	Gly	Thr	Leu	Thr	Val	Thr	Ser	Thr	Leu	Pro	
				65					70						75
Val	Gly	Thr	Arg	Asp	Trp	Ile	Glu	Gly	Glu	Thr	Gln	Cys	Arg	Val	
				80					85						90
Thr	His	Pro	His	Leu	Pro	Arg	Ala	Leu	Met	Arg	Ser	Thr	Thr	Lys	
				95					100						105

Thr Ser Gly Pro

<210> 2
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<400> 2

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 Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu
   1               5                  10                  15

 Gly Gln Arg Ala Thr Ile Ser Cys Lys Ala Ser Gln Ser Val Asp
                20                  25                  30

 Tyr Asp Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly
                35                  40                  45

 Gln Pro Pro Ile Leu Leu Ile Tyr Ala Ala Ser Tyr Leu Gly Ser
                50                  55                  60

 Glu Ile Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
                65                  70                  75

 Thr Leu Asn Ile His Pro Val Glu Glu Glu Asp Ala Ala Thr Phe
                80                  85                  90

 Tyr Cys Gln Gln Ser His Glu Asp Pro Tyr Thr Phe Gly Ala Gly
                95                 100                 105

 Thr Lys Leu Glu Ile Lys
               110
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<211> 134
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<400> 3

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 Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser
   1               5                  10                  15

 Gln Ser Leu Ser Leu Ala Cys Ser Val Thr Gly Tyr Ser Ile Thr
                20                  25                  30

 Ser Gly Tyr Ser Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys
                35                  40                  45

 Leu Glu Trp Met Gly Ser Ile Thr Tyr Asp Gly Ser Ser Asn Tyr
                50                  55                  60

 Asn Pro Ser Leu Lys Asn Arg Ile Ser Val Thr Arg Asp Thr Ser
                65                  70                  75

 Gln Asn Gln Phe Phe Leu Lys Leu Asn Ser Ala Thr Ala Glu Asp
                80                  85                  90

 Thr Ala Thr Tyr Tyr Cys Ala Arg Gly Ser His Tyr Phe Gly His
                95                 100                 105

 Trp His Phe Ala Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser
               110                 115                 120

 Ser Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Arg
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125 130

<210> 4
<211> 124
<212> PRT
<213> Mus musculus

<400> 4

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Asp Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val
  1               5                  10                  15

Gly Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln Asn Val Ser
             20                  25                  30

Ser Asn Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys
             35                  40                  45

Ala Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp
             50                  55                  60

Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile
             65                  70                  75

Ser Asn Val Gln Ser Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln
             80                  85                  90

Tyr Tyr Thr Tyr Pro Leu Tyr Thr Phe Gly Gly Gly Thr Lys Leu
             95                 100                 105

Glu Ile Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro
            110                 115                 120

Pro Ser Thr Arg
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<210> 5
<211> 130
<212> PRT
<213> Mus musculus

<400> 5

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Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser
  1               5                  10                  15

Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Thr Ile Thr
             20                  25                  30

Ser Asp Asn Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys
             35                  40                  45

Leu Glu Trp Met Gly Tyr Ile Asn His Ser Gly Thr Thr Ser Tyr
             50                  55                  60

Asn Pro Ser Leu Lys Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser
             65                  70                  75

Lys Asn Gln Phe Phe Leu Gln Leu Asn Ser Val Thr Thr Glu Asp
             80                  85                  90

Thr Ala Thr Tyr Tyr Cys Ala Trp Val Val Ala Tyr Ala Met Asp
             95                 100                 105
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Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr
110 115 120

Thr Pro Pro Ser Val Tyr Pro Leu Ala Arg
125 130

<210> 6
<211> 106
<212> PRT
<213> Mus musculus

<400> 6
Asp Ile Gln Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu
1 5 10 15

Gly Gln Arg Ala Thr Ile Ser Cys Lys Ala Ser Gln Ser Val Asp
20 25 30

Tyr Asp Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly
35 40 45

Gln Pro Pro Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser
50 55 60

Gly Ile Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
65 70 75

Thr Leu Asn Ile His Pro Val Glu Glu Glu Asp Ala Ala Thr Tyr
80 85 90

Tyr Cys Gln Gln Ser Asn Glu Asp Pro Phe Thr Phe Gly Ala Gly
95 100 105

Thr

<210> 7
<211> 137
<212> PRT
<213> Mus musculus

<400> 7
Asp Val Gln His Gln Glu Ser Glu Pro Asp Leu Val Lys Pro Ser
1 5 10 15

Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
20 25 30

Ser Gly Tyr Asn Arg His Trp Ile Arg Gln Phe Pro Gly Asn Lys
35 40 45

Leu Glu Trp Met Gly Tyr Ile His Tyr Ser Gly Ser Thr Asn Tyr
50 55 60

Asn Pro Ser Leu Lys Arg Arg Ile Ser Ile Thr Arg Asp Thr Ser
65 70 75

Lys Asn Gln Phe Phe Leu Gln Leu Asn Ser Val Thr Thr Glu Asp
80 85 90

Thr Ala Thr Tyr Tyr Cys Ala Arg Gly Ser Ile Tyr Tyr Tyr Gly
95 100 105

Ser Arg Tyr Arg Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val
110 115 120

Thr Val Ser Ser Ala Lys Arg His Pro His Leu Ser Ile His Trp
125 130 135

Pro Gly

<210> 8
<211> 453
<212> PRT
<213> Artificial sequence

<220>
<223> humanized maell, version 1 heavy chain

<400> 8
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
1 5 10 15

Gly Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Tyr Ser Ile Thr
20 25 30

Ser Gly Tyr Ser Trp Asn Trp Ile Arg Gln Ala Pro Gly Lys Gly
35 40 45

Leu Glu Trp Val Ala Ser Ile Thr Tyr Asp Gly Ser Thr Asn Tyr
50 55 60

Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser
65 70 75

Lys Asn Thr Phe Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp
80 85 90

Thr Ala Val Tyr Tyr Cys Ala Arg Gly Ser His Tyr Phe Gly His
95 100 105

Trp His Phe Ala Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser
110 115 120

Ser Ala Ser Thr Lys Gly Lys Gly Pro Ser Val Phe Pro Leu Ala
125 130 135

Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys
140 145 150

Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
155 160 165

Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
170 175 180

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
185 190 195

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His

```
                200                 205                 210

Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser
                215                 220                 225

Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
                230                 235                 240

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
                245                 250                 255

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
                260                 265                 270

Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
                275                 280                 285

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
                290                 295                 300

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
                305                 310                 315

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser
                320                 325                 330

Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
                335                 340                 345

Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
                350                 355                 360

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
                365                 370                 375

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
                380                 385                 390

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
                395                 400                 405

Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
                410                 415                 420

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
                425                 430                 435

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
                440                 445                 450

Pro Gly Lys
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<210> 9
<211> 218
<212> PRT
<213> Artificial sequence

<220>
<223> humanized maell, version 1, light chain

<400> 9
Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
1 5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Val Asp
20 25 30

Tyr Asp Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly
35 40 45

Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala Ser Tyr Leu Glu Ser
50 55 60

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
65 70 75

Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr
80 85 90

Tyr Cys Gln Gln Ser His Glu Asp Pro Tyr Thr Phe Gly Gln Gly
95 100 105

Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe
110 115 120

Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser
125 130 135

Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val
140 145 150

Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu
155 160 165

Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
170 175 180

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
185 190 195

Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr
200 205 210

Lys Ser Phe Asn Arg Gly Glu Cys
215

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<211> 8
<212> PRT
<213> Homo sapiens

<400> 10
Phe Asp Leu Phe Ile Arg Lys Ser
1 5

<210> 11
<211> 9
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<213> Homo sapiens

<400> 11

Lys Asp Thr Leu Met Ile Ser Arg Thr
1 5

<210> 12
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<400> 12
Ala Pro Ser Lys Gly Thr
1 5

<210> 13
<211> 6
<212> PRT
<213> Homo sapiens

<400> 13
Ser His Glu Asp Pro Gln
1 5

<210> 14
<211> 11
<212> PRT
<213> Homo sapiens

<400> 14
Ser Arg Ala Ser Gly Lys Pro Val Asn His Ser
1 5 10

<210> 15
<211> 11
<212> PRT
<213> Homo sapiens

<400> 15
Tyr Val Asp Gly Val Gln Val His Asn Ala Lys
1 5 10

<210> 16
<211> 10
<212> PRT
<213> Homo sapiens

<400> 16
Gly Thr Arg Asp Trp Ile Glu Gly Glu Thr
1 5 10

<210> 17
<211> 10
<212> PRT
<213> Homo sapiens

<400> 17
Leu His Gln Asp Trp Leu Asp Gly Lys Glu
1 5 10

<210> 18
<211> 4
<212> PRT
<213> Homo sapiens

<400> 18
Arg Ala Leu Met
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<210> 19
<211> 4
<212> PRT
<213> Homo sapiens

<400> 19
Ala Pro Ile Glu
1

<210> 20
<211> 6
<212> PRT
<213> Homo sapiens

<400> 20
Lys Glu Glu Lys Gln Arg
1 5

<210> 21
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<400> 21
Pro Arg Glu Gln Gln Tyr
1 5

<210> 22
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<400> 22
Gln Cys Arg Val Thr
1 5

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<400> 23
Ala Cys Ala Val Ala
1 5

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<213> Homo sapiens

<400> 24
Gln Lys His Trp Leu Ser Asp Arg
1 5

<210> 25
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<400> 25
Ala Ala Ala Trp Leu Ala Ala Ala
1 5

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<400> 26
Tyr Asp Gly Asp
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<210> 27
<211> 8
<212> PRT
<213> Homo sapiens

<400> 27
Phe Asp Leu Phe Ile Arg Lys Ser
1 5

<210> 28
<211> 9
<212> PRT
<213> Homo sapiens

<400> 28
Lys Asp Thr Leu Met Ile Ser Arg Thr
1 5

<210> 29
<211> 4
<212> PRT
<213> Homo sapiens

<400> 29
Phe Asp Leu Phe
1

<210> 30
<211> 4
<212> PRT
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<223> Mutant IgE Fc(epsilon)3 sequence fragment

<400> 30
Gln Asp Leu His
1

<210> 31
<211> 6
<212> PRT
<213> Homo sapiens

<400> 31
Ala Pro Ser Lys Gly Thr
1 5

<210> 32
<211> 6
<212> PRT
<213> Homo sapiens

<400> 32
Ser His Glu Asp Pro Gln
1 5

<210> 33
<211> 11
<212> PRT
<213> Homo sapiens

<400> 33
Ser Arg Ala Ser Gly Lys Pro Val Asn His Ser
1 5 10

<210> 34
<211> 11
<212> PRT
<213> Homo sapiens

<400> 34
Tyr Val Asp Gly Val Gln Val His Asn Ala Lys
1 5 10

<210> 35
<211> 6
<212> PRT
<213> Homo sapiens

<400> 35
Ser Arg Ala Ser Gly Lys
1 5

<210> 36
<211> 6
<212> PRT
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<220>
<223> Mutant IgE Fc(epsilon)3 sequence fragment

<400> 36
Ala Ala Ala Ala Gly Ala
1 5

<210> 37
<211> 6
<212> PRT
<213> Homo sapiens

<400> 37
Lys Glu Glu Lys Gln Arg
1 5

<210> 38
<211> 6
<212> PRT
<213> Homo sapiens

<400> 38
Pro Arg Glu Gln Gln Tyr
1 5

<210> 39
<211> 6
<212> PRT
<213> Homo sapeins

<400> 39
Lys Glu Glu Lys Gln Arg
1 5

<210> 40
<211> 6
<212> PRT
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<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 40
Ala Glu Ala Lys Ala Arg
1 5

<210> 41
<211> 6
<212> PRT
<213> Homo sapiens

<400> 41
Lys Glu Glu Lys Gln Arg
1 5

<210> 42
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<212> PRT
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Lys Ala Glu Ala Gln Ala
1 5

<210> 43
<211> 6
<212> PRT
<213> Homo sapiens

<400> 43
Lys Glu Glu Lys Gln Arg
1 5

<210> 44
<211> 6
<212> PRT
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<400> 44
Ala Ala Glu Ala Gln Ala
1 5

<210> 45
<211> 10
<212> PRT
<213> Homo sapiens

<400> 45
Gly Thr Arg Asp Trp Ile Glu Gly Glu Thr
1 5 10

<210> 46
<211> 10
<212> PRT
<213> Artificial sequence

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<400> 46
Leu His Gln Asp Trp Leu Asp Gly Lys Glu
1 5 10

<210> 47
<211> 4
<212> PRT
<213> Homo sapiens

<400> 47
Glu Gly Glu Thr
1

<210> 48
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 48
Ala Gly Ala Ala
1

<210> 49
<211> 9
<212> PRT

<213> Homo sapiens

<400> 49
Thr Arg Asp Trp Ile Glu Gly Glu Thr
1 5

<210> 50
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 50
His Gln Asp Trp Leu Asp Gly Lys Glu
1 5

<210> 51
<211> 4
<212> PRT
<213> Homo sapiens

<400> 51
Glu Gly Glu Thr
1

<210> 52
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 52
Asp Gly Lys Glu
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<210> 53
<211> 5
<212> PRT
<213> Homo sapiens

<400> 53
Gln Cys Arg Val Thr
1 5

<210> 54
<211> 5
<212> PRT
<213> Artificial sequence

<220>
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<400> 54
Ala Cys Ala Val Ala
1 5

<210> 55

<211> 4
<212> PRT
<213> Homo sapiens

<400> 55
Arg Ala Leu Met
1

<210> 56
<211> 4
<212> PRT
<213> Artificial sequence

<220>
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<400> 56
Ala Pro Ile Glu
1

<210> 57
<211> 8
<212> PRT
<213> Homo sapiens

<400> 57
Gln Lys His Trp Leu Ser Asp Arg
1 5

<210> 58
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)e fragment

<400> 58
Ala Ala Ala Trp Leu Ala Ala Ala
1 5

<210> 59
<211> 4
<212> PRT
<213> Homo sapiens

<400> 59
Pro Arg Ala Ala
1

<210> 60
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 60
Gln Pro Arg Glu
1

<210> 61
<211> 6
<212> PRT
<213> Homo sapiens

<400> 61
Ala Ser Pro Ser Gln Thr
1 5

<210> 62
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Mutant sequence substituted in place of IgE Fc(epsilon)3 fragment

<400> 62
Leu His Asn His Tyr
1 5

<210> 63
<211> 5
<212> PRT
<213> Homo sapiens

<400> 63
Ser Pro Ser Gln Thr
1 5

<210> 64
<211> 5
<212> PRT
<213> Homo sapiens

<400> 64
Ala Pro Ala Ala Ala
1 5

<210> 65
<211> 451
<212> PRT
<213> Artificial sequence

<220>
<223> Full-length heavy chain sequence corresponding to F(ab)8b of Table 9

<400> 65
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
1 5 10 15

Gly Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Tyr Ser Ile Thr
20 25 30

Ser Gly Tyr Ser Trp Asn Trp Ile Arg Gln Ala Pro Gly Lys Gly
35 40 45

Leu Glu Trp Val Ala Ser Ile Thr Tyr Asp Gly Ser Thr Asn Tyr
50 55 60

Asn Pro Ser Val Lys Gly Arg Ile Thr Ile Ser Arg Asp Asp Ser
65 70 75

Lys Asn Thr Phe Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp
80 85 90

Thr Ala Val Tyr Tyr Cys Ala Arg Gly Ser His Tyr Phe Gly His
95 100 105

Trp His Phe Ala Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser
110 115 120

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser
125 130 135

Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val
140 145 150

Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly
155 160 165

Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
170 175 180

Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
185 190 195

Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
200 205 210

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp
215 220 225

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
230 235 240

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
245 250 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
260 265 270

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
275 280 285

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
290 295 300

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
305 310 315

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
320 325 330

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
335 340 345

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
350 355 360

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly

365 370 375

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
380 385 390

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
395 400 405

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
410 415 420

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
425 430 435

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
440 445 450

Lys

<210> 66
<211> 451
<212> PRT
<213> Artificial sequence

<220>
<223> Full-length heavy chain sequence corresponding to F(ab)8a of Table 9

<400> 66
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
1 5 10 15

Gly Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Tyr Ser Ile Thr
20 25 30

Ser Gly Tyr Ser Trp Asn Trp Ile Arg Gln Ala Pro Gly Lys Gly
35 40 45

Leu Glu Trp Val Ala Ser Ile Thr Tyr Asp Gly Ser Thr Asn Tyr
50 55 60

Asn Pro Ser Leu Lys Gly Arg Ile Thr Ile Ser Arg Asp Asp Ser
65 70 75

Lys Asn Thr Phe Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp
80 85 90

Thr Ala Val Tyr Tyr Cys Ala Arg Gly Ser His Tyr Phe Gly His
95 100 105

Trp His Phe Ala Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser
110 115 120

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser
125 130 135

Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val
140 145 150

Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly
155 160 165

Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
170 175 180

Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
185 190 195

Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
200 205 210

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp
215 220 225

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
230 235 240

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
245 250 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
260 265 270

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
275 280 285

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
290 295 300

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
305 310 315

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
320 325 330

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
335 340 345

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
350 355 360

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
365 370 375

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
380 385 390

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
395 400 405

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
410 415 420

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
425 430 435

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
440 445 450

Lys

<210> 67
<211> 218
<212> PRT
<213> Artificial sequence

<220>
<223> Full-length light chain sequence corresponding to F(ab)9 of Table 9

<400> 67

```
 Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Val Ser Val
   1               5                  10                  15

 Gly Asp Arg Ala Thr Ile Thr Cys Arg Ala Ser Gln Ser Val Asp
                20                  25                  30

 Tyr Asp Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly
                35                  40                  45

 Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala Ser Tyr Leu Glu Ser
                50                  55                  60

 Gly Ile Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
                65                  70                  75

 Thr Leu Thr Ile Ser Ser Val Gln Pro Glu Asp Phe Ala Thr Tyr
                80                  85                  90

 Tyr Cys Gln Gln Ser His Glu Asp Pro Tyr Thr Phe Gly Gln Gly
                95                 100                 105

 Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe
               110                 115                 120

 Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser
               125                 130                 135

 Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val
               140                 145                 150

 Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu
               155                 160                 165

 Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
               170                 175                 180

 Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
               185                 190                 195

 Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr
               200                 205                 210

 Lys Ser Phe Asn Arg Gly Glu Cys
               215
```

<210> 68
<211> 451
<212> PRT
<213> Artificial sequence

<220>
<223> Full-length heavy chain sequence corresponding to F(ab)9 of Table 9

<400> 68

```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
  1               5                  10                  15

Gly Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Tyr Ser Ile Thr
             20                  25                  30

Ser Gly Tyr Ser Trp Asn Trp Ile Arg Gln Ala Pro Gly Lys Gly
             35                  40                  45

Leu Glu Trp Met Gly Ser Ile Thr Tyr Asp Gly Ser Thr Asn Tyr
             50                  55                  60

Asn Asp Ser Leu Lys Gly Arg Ile Thr Val Ser Arg Asp Asp Ser
             65                  70                  75

Lys Asn Thr Phe Tyr Leu Gln Leu Asn Ser Ala Arg Ala Glu Asp
             80                  85                  90

Thr Ala Val Tyr Tyr Cys Ala Arg Gly Ser His Tyr Phe Gly His
             95                 100                 105

Trp His Phe Ala Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser
            110                 115                 120

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser
            125                 130                 135

Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val
            140                 145                 150

Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly
            155                 160                 165

Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
            170                 175                 180

Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
            185                 190                 195

Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
            200                 205                 210

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp
            215                 220                 225

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
            230                 235                 240

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
            245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
            260                 265                 270

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            275                 280                 285

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
            290                 295                 300
```

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
305 310 315

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
320 325 330

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
335 340 345

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
350 355 360

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
365 370 375

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
380 385 390

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
395 400 405

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
410 415 420

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
425 430 435

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
440 445 450

Lys